

Borehole

60-10-11

Log Event A

Borehole Information

Farm : <u>U</u>	Tank : <u>U-110</u>	Site Number : <u>299-W18-107</u>
N-Coord : <u>37,943</u>	W-Coord : <u>75,657</u>	TOC Elevation : <u>Unknown</u>
Water Level, ft :	Date Drilled : <u>1/1976</u>	

Casing Record

Type : <u>Steel-welded</u>	Thickness : <u>0.280</u>	ID, in. : <u>6</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>105</u>	

Borehole Notes:

The ground surface surrounding this borehole is a large berm that is 25 ft wide and 2 to 3 ft high. The berm covers tank valve pits that are less than 10 ft from the borehole.

The borehole casing (6-in.) was installed to a depth of 105 ft; the casing was then withdrawn 5 ft and the resulting space was plugged with cement. The borehole was started with 20 ft of 8-in. casing. This casing was withdrawn, and the annulus between the borehole wall and the 6-in. casing was filled with cement.

Equipment Information

Logging System : <u>1</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>10/1995</u>	Calibration Reference : <u>GJPO-HAN-3</u>	Logging Procedure : <u>P-GJPO-1783</u>

Log Run Information

Log Run Number : <u>1</u>	Log Run Date : <u>11/21/1995</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>0.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>28.5</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Log Run Number : <u>2</u>	Log Run Date : <u>11/22/1995</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>98.5</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>27.5</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>



Spectral Gamma-Ray Borehole
Log Data Report

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Borehole

60-10-11

Log Event A

Analysis Information

Analyst : H.D. Mac Lean

Data Processing Reference : P-GJPO-1787

Analysis Date : 6/10/1996

Analysis Notes :

The log of the borehole was completed in two runs. The pre- and post-field verification spectra indicate that the logging system was operating properly during data collection. The energy/channel drift observed during the logging runs remained within an acceptable range for the search parameters used by the processing software, and multiple energy calibrations were not required to process the data. The monitored portions of the verification spectra indicate no deterioration in the efficiency of the detector. Data overlaps occurred when the same depth intervals were logged between the log runs. The calculated concentrations were within the statistical uncertainty of the measurements, indicating acceptable repeatability.

The casing thickness is presumed to be 0.280 inch (in.), on the basis of published thickness for schedule-40, 6-in. steel casing. Casing-correction factors for a 0.280-in.-thick steel casing were applied during analysis.

Cs-137 was the only man-made radionuclide detected. Cs-137 occurred between the ground surface and a depth of 14.5 ft, at a depth of 23 ft, and at the bottom of the borehole. The Cs-137 concentrations in the continuous zone of the upper part of the borehole ranged from 0.2 to about 6 pCi/g. The maximum concentration of slightly less than 6 pCi/g was measured at a depth of 1.5 ft below the ground surface.

Details regarding the interpretation of the data for this borehole are presented in the Tank Summary Data Reports for tanks U-107 and U-110.

Log Plot Notes:

Separate log plots show the man-made (e.g., Cs-137) and the naturally occurring radionuclides (K-40, U-238, and Th-232). The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

A combination plot includes both the man-made and natural radionuclides, in addition to the total gamma derived from the spectral data and the Westinghouse Hanford Company (WHC) Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data from WHC with no attempt to adjust the depths to coincide with the SGLS data.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the minimum detection level (MDL). The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.